Meeting summary

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1/31/2010

Collaboration organization

- Institutional Board is working: Marvin Marshak is chair, Maury Goodman is deputy chair.
- Co-spokespersons elected: Bob Svoboda, Milind Diwan working together for more than a year now.
- Deputy spokesperson will be Maury. Current responsibilities of collaboration personnel management will pass from Milind Diwan to Maury.
- Executive board appointed and elected according to the bylaws. Well integrated with the project team which is complete.
- Speaker's committee: Jim Napolitano, Christopher Mauger, Jack Schneps. They will solicit and coordinate talks for meetings.
- 45 institutions, 206 collaborators + few new ones. Apologies for the delay in adding names to the list.

Highlights beam

- On the Beam Facility site, the organization is in place, the WBS and a WBS dictionary developed significantly, we recently got significant engineering support.

- A lot of progress on civil construction issues (constructability review, preliminary cost estimate and schedule), lattice optics and magnet issues.

- Work in progress on the Neutrino Beam technical components in many fronts. In particular, developing work packages and establishing collaborations for target and remote handling related work. Aiming for a 700 kW target design sometime in the summer 2010 and performing R&D for a 2 MW target.

Input is needed for beam design from the collaboration on various technical parameters.

Highlights near detector

Purpose of Near Detector

- Primary purpose – enhance the sensitivity of the oscillation analyses
- Potential impact
  - background prediction
    - intrinsic ν_e measurement
    - NC background
      - rates
      - detailed topologies
  - resolve far detector neutrino spectrum reconstruction ambiguities
    - pion absorption
    - inelastic scattering/charge exchange
    - probably bigger issue for water Cherenkov, but argon not immune
- Primary challenge
  - Far/near spectral ratio ≠ 1 for many energies

Challenge of the ND is very clear, but this is also an opportunity to obtain very high statistics data for other physics. A writeup is circulating about the physics menu.

Highlights water Cherenkov

- Project is almost completely staffed. Ready to make a budget and schedule.
- Vessel/liner: A&E company on-board and close communication with DUSEL implemented. goal: 30% design.
- PMT: RFI placed. responses will be received soon. Plan for electrical and mechanical testing in progress.
- Electronics: requirements are clear, base design in progress.
- Calibrations: expect to have a task list and requirements soon.
- Water system: initial design and cost ready. requirements and materials testing in progress.
- Computing/DAQ has a strong team. Infrastructure in place. Requirements getting ready.
- Simulation is ready and getting tested. Hopefully will get ready for production in weeks.
- By May we may have a schedule for the water Cherenkov detector. We will need serious discussion how to move to construction aggressively.

Highlights Liquid Argon

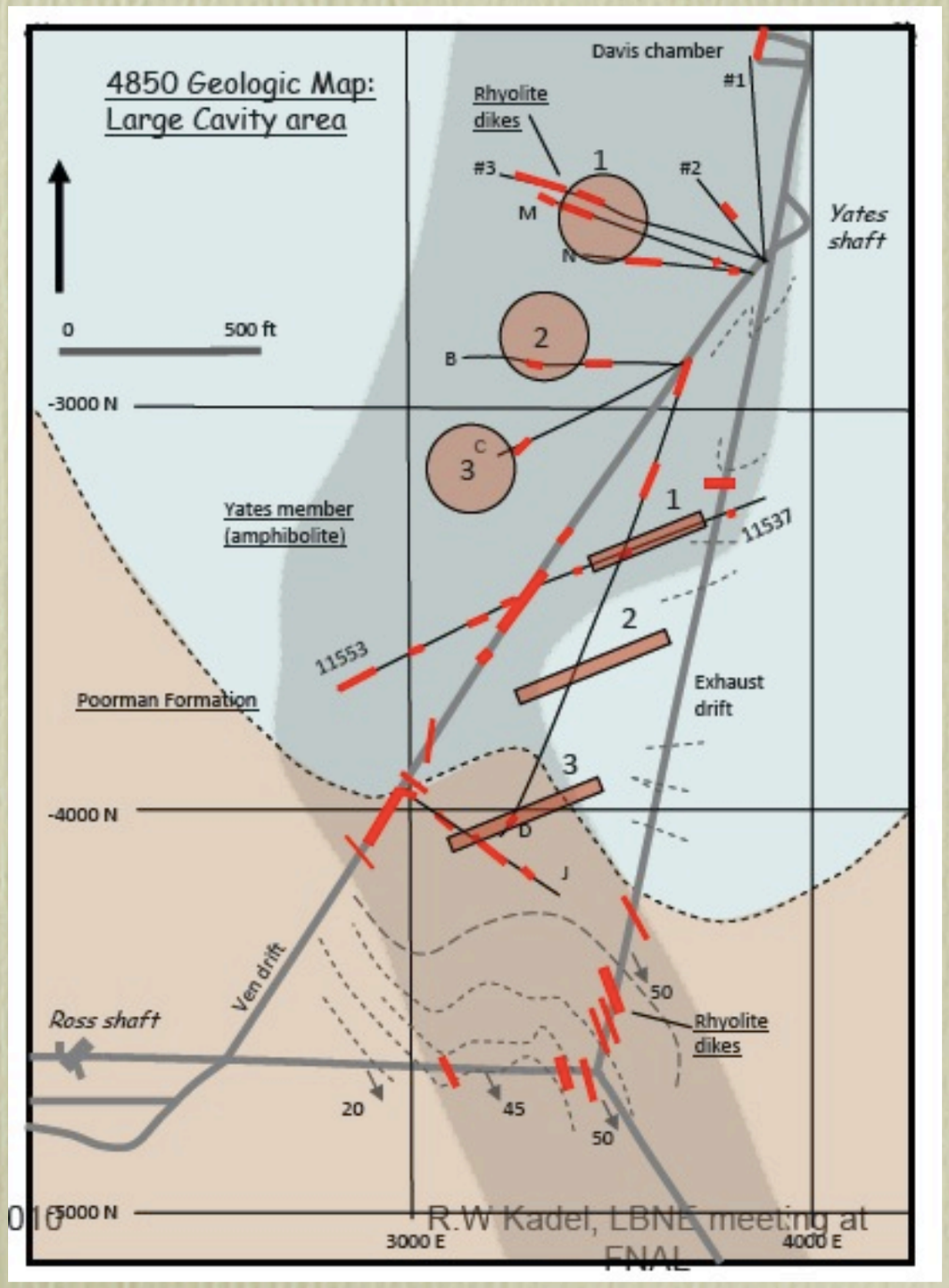
- Physics studies needed to support the design at CD-1
  - Study CC νe identification efficiency and NC π^o rejection efficiency for
    - 3mm vs 5mm wire spacing
    - 2 wire planes vs 3 wire planes
  - Define fiducial cuts
- Recommend broad participation by the collaboration in the conduct and review of these studies
  - Specifics: LAr WG needs help with visual scanning

Impressive work in progress on reconstruction

- Results from Arup and Jacob's Associates studies are a significant component to our conceptual design
  - Initial indications are that this will be successful
- Information will soon exist to define a detector that will meet the needs of the collaboration
  - This will address cost and technical risk and define the next optimization steps
  - R&D that supports this risk mitigation will be described in the next talk

Bruce has defined a reference design which is quite useful.

Highlights DUSEL



- Cavity size for 100kT FV in good shape (with 2m FV cut!)
- Layout for water system available
- 1st pass for conventional power requirements available
- Need
  - Underground and above ground assembly areas
  - Hazard Definition and Mitigation analysis
  - Clean rooms (will effect pwr. requirements)
  - Counting room, DAQ, Computing
  - Other underground space
  - IT: GByte per day? Local storage & computing
  - Safety and Security monitoring requirements for DUSEL (eg: RFI badging that limits access or operation of equipment, slow monitoring, UPS, etc)

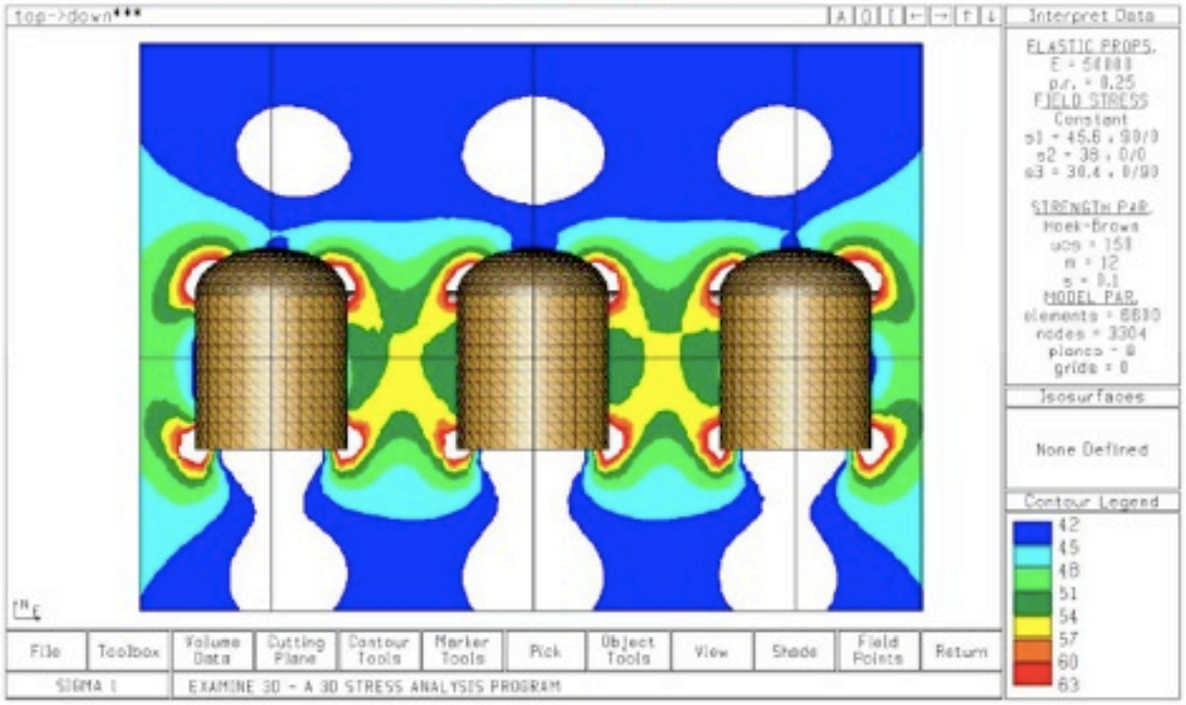
Many documents from DUSEL are becoming available. Richard is the point of contact for DUSEL related information.

More from RichK

- Mail box designs probably do not want to exceed ~40m width.
- 150kT may be possible (65m diameter) but not part of DUSEL scope at this time. Construability issue: perceived risk.
- Golder SOW is available, I will put in DocuShare in Water Cherenkov private folder.
- GeoTech reports are available in DocuShare, but put in an area where I (and LBNE) do not have access. Will fix this.
- Showed Golder simulation guy temperature distribution from H_20.

  They are interested to examine thermal stress in rock. Assumed water temp: is 13 degC, Dome: ~22 degC ±4 degC

Major Stress at Cavern Centre Plane



Hurrah ! CDo

- **By agency agreement:**
  - NSF will steward DUSEL facility
  - DOE OHEP will steward LBNE
    - Includes beam line, near and far detectors
- **LBNE CD0 approved Jan 8, 2010.**
- **Scope agencies are targeting is two 100-kton Water-Cherenkov-Equivalent (WCE) cavern/detector ensembles, near detector, & 700 kW beamline.**
  - NSF will contribute to LBNE detector (& cavity).
  - Third detector will require an additional partner.
  - Overall scope will be responsive to cost.

This is all good; let's not overanalyze this.

Ready, set, go for CD1

- Budget Summary : FY09-11
  - LBNE($9.18M) + ARRA ($15M) + PED ($12M)*
  - Total FY09-11 : $39.18 M
  - Post CD-0 goes on TPC
  - So far ~$7.4 M obligated
  - Current plan “almost works” – too soon to be absolutely su
- Timeline
  - CD-1 1st Quarter of FY11 (October – December)
- Major Tasks for next 9 months
  - Conceptual Design
  - Conceptual Design Report
  - Cost and Schedule Development
  - Document Preparation

CD-1 Documentation (II)
NSLS-II (~$900M) as an example

- Conceptual Design Report – 781 pages
- Preliminary Project Execution Plan – 65 pages
- Acquisition Strategy – 18 pages
- Environmental Assessment – 55 pages
- Preliminary Hazard Analysis – 60 pages
- Quality Assurance Plan – 19 pages
- Risk Management Plan – 15 pages
- WBS – 1 page
- WBS Dictionary – 36 pages
- Summary Schedule – 1 page
- Detailed Schedule – 56 pages with ~20 tasks per page = ~1100 tasks

We don’t quite have a detailed schedule for each item to be delivered for CD1. We will try to work on this. Goal will be to guard the time of the collaboration for productive tasks and avoid duplication.

Funding issues

- On project side planning has started for FY11 and FY12. Project managers will need input for this planning.
- Other avenue is the university proposal coordination. Christopher Mauger is coordinating this piece. The proposal has threes parts: ND (complete), WCD (not complete), LAR(not complete). This needs a push. Bob and I would like to encourage this and will help push it along.
- DOE is expecting the university proposal ASAP

International collaboration

- We will keep the character of this experiment as “A national project with international participation”
- Internationalization from the start is not as easy as it sounds. Government-to-government umbrella agreements are delicate and time-consuming.
- Will create an “International Committee”. Discussion will start at the next collaboration meeting. Proper timing is important.

Next meeting dates

- For the last year we have focussed on getting a collaboration organization started and also creating a project.
- This meeting was all plenary so that everyone could get the big picture. There are quite a few new people who need to know each other.
- Next meeting date is arranged: May 25-28 (checkout Saturday), Deadwood.
- ND/beam joint meeting April 8-10, FNAL, Thursday-Saturday.
- Next to Next meeting: Proposal Sep. 1-4, 2010 at FNAL (very important meeting because of the October deadline on various documentation).
- Tentative: Meeting: Second week of January, 2011 in California.

Next meeting goals/May25-28

- Very important to go to the detector site for many reasons.
- Next meeting will have at least a day of parallel sessions. We will try to shift the focus to physics discussions somewhat more. Hopefully there will be more physics calculations.
- We would like to have a Phys.Wrk.Grp. organized.
- Will be difficult because by May we are going to get many answers. Balance between technical/physics will not be easy.
- We intend to keep the alternative technologies section for discussions of topics that are out of the current mainstream.